

## **Building Local Area Networks and Affiliates**

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### **Abstract**

GLOBE is a challenging program to implement in the classroom. One of the many things that help teachers develop and sustain their efforts is a strong sense of community. Local area data collection networks, often developed around GLOBE Affiliates, can provide this sense of community. Local area networks can provide skills and application workshops, organize locally-based research efforts, coordinate and disseminate the contributions of local experts and provide a friendly stimulus and support network to over-worked teachers. Neither local area networks nor affiliate programs spring to life spontaneously, but instead must be nurtured by local Partnerships or Science Investigations. This presentation will share some of our experience from southern Arizona and beyond.

### **Background**

Program-wide assessments of GLOBE implementation by SRI have consistently identified several common barriers to complete program implementation (Penuel and Means, 2004):

- Difficulty with curriculum integration
- Data reporting is perceived as less important than data collection
- Difficulty finding the time
- Difficulty with internet connection
- Time away from mandated material

Besides collecting and reporting data, communicating with other GLOBE schools is the single characteristic that distinguishes steady reporters (reporting data for more than 7 months/year) from periodic or non-reporters (reporting data for less than 3 months/year). While many factors contribute to differences between the degree of participation, it seems clear that if teachers experience trouble implementing the program, then program implementation would improve if they had a local support network or mentors who have successfully confronted the same issues (often related to district or state mandates or local environmental conditions).

### **Local Area Concept**

Encouraging teachers to focus on and actively seek out local scientific issues has many other positive benefits. Teachers who help define the scientific agenda feel a strong sense of commitment because they can claim at least partial ownership of the question. They are more likely to have prior experience with the context and possible meaning of data

associated with the issue or they are more likely to find local experts who can provide this information. When the focus of a study is local, teachers are more likely to devote in-school time to this topic because they can more readily find support from within their school, their students' parents and the community. Finally, workshops organized around a specific, local research question are more tangible and thus more meaningful to teachers.

The shortcomings of this approach are that teachers are already incredibly busy and even if they are motivated, there might not be enough hours in their day to talk with local experts, define a feasible research question, and solicit community support. We want to present three models of GLOBE teacher support that help build upon these empowering characteristics and encourages the formation of local-area networks.

### **Partnership-Affiliate Model (University of Arizona)**

GLOBE relies on no-exchange-of-funds agreements with regional Partnerships for most teacher training and teacher support services. Partnerships vary considerably in their mission, level of funding, level of activity and focus. While Partnerships represent a major local commitment to provide teacher training and support, many are under-funded. One way to leverage and further diffuse their influence into the community is for Partnerships to develop and partner with GLOBE Affiliates (these are basically more informal or less obliged Partnerships). As with any partnership, it takes time and resources to develop strong Affiliates with a common sense of mission and mutually beneficial goals. This needs to be an active process and might require affiliates to be developed and integrated into a regional plan one-by-one. Affiliates might take primary responsibility for any number of roles ranging from overseeing shared monitoring sites to providing complementary curriculum integration. We will highlight two case studies between the University of Arizona Partnership and its affiliation with the Pima County Natural Resource, Parks and Recreation Department and the Arizona Sonora Desert Museum.

### **Geographical-focus Model (San Pedro)**

One of the more natural ways of organizing environmental research is by taking a watershed or geographic approach. Because of interconnections between Earth System Components, it should be possible to interpret downstream water chemistry based on up-stream soils, land cover and weather conditions. Historically, watersheds have tied people together in many other ways, socially, economically and politically. People living within a watershed are more likely to have an intuitive feel for the conflicts and differences that make environmental issues exciting to study. In fact, community debate can spur schools to be more active, whether the goal is community service, baseline studies or environment monitoring. Local networks can serve as a focal point for local fund raising, professional development, mutual support and community involvement. We will highlight a case study of schools working together in a loose network in the San Pedro Basin of SE Arizona.

## **Research-driven Model (SMEX04)**

Finally, pre-existing, on-going or planned research activities, often called intensive field campaigns (IFC's) provide an excellent focal point for motivating local GLOBE schools to be more active. Although the scientific enterprise may seem well funded from the outside, almost any field study would benefit from more sampling points, longer data records and a local/historical appreciation for how what is happening now compares with the past. GLOBE schools with long-term data records and a keen and quantitative sense of normalcy can be an invaluable asset to an IFC. While GLOBE schools can and do go to great lengths to accommodate their observation schedules and sampling patterns to short-term opportunities, scientists associated with IFC's need to practice the art of compromise in asking for extraordinary observations. More generally, an IFC can be an opportunity for scientists to engage and inform the local community about their careers and their science, schools can leverage new or specialized equipment from the endeavor and local partnerships can help mediate between the two, possibly contributing a specially focused teacher training event to help support and expand the effort. We will report on an on-going effort to organize GLOBE schools in support of the Soil Moisture Experiment 2004 (SMEX04) in SE Arizona and Northern Mexico this summer.

## **Conclusions**

Local networks of GLOBE schools

- make it easier for partnerships to provide training and follow-up support,
- have the know-how to develop feasible local research questions,
- provide critical teacher support, such as mentoring and problem solving,
- focus community support, such as fund raising and local expertise,
- motivate teachers and students to more careful and more regular measurements,
- result in more complete and more effective implementation of all GLOBE goals.

It often takes hard work to break down barriers between schools and school districts and more hard work to hold them together. Networks are not perpetual motion machines – they go off in different directions or they break up if they are not carefully nurtured - but the advantages and opportunities created are worth the extra work.

## **References**

Penuel, W.R. and B. Means, 2004, Implementation variation and fidelity in an inquiry science program: Analysis of GLOBE data reporting patterns, J. Res. Sci. Teaching 41(3), 294-315.